

Derivation and Application of Macroinvertebrate Tolerance Values for the Western United States

Lester Yuan
Eco Scientist
NCEA/ORD
(202) 564-3284
yuan.lester@epa.gov

Authors: L.L. Yuan, T. Laidlaw, A. Mays, C. P. Hawkins, P. Tyler, B. Smith, D. Drake, D. P. Larsen

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Macroinvertebrates are widely collected to assess the condition of streams and rivers. To help interpret these data, different macroinvertebrate taxa are often classified in terms of their perceived sensitivity or tolerance to anthropogenic disturbance. One of the most commonly used sets of tolerance classifications was derived by Hilsenhoff (1987), with respect to a gradient of organic pollution. These classifications have since been successfully applied to assess the condition of streams in the midwest and eastern United States. However, use of these tolerance classifications in the western United States is hindered by two factors: different species are typically collected in the west, and stressors other than organic pollution are often important. Furthermore, the programmatic applications of biological data have been extended in recent years beyond a simple assessment of stream condition. Increasingly, biologists are called upon to use their data to make a determination of the causes of impairment in different streams. Therefore, estimates of tolerance or sensitivity to different stressors are required. In February 2004, the EPA and the Council of State Governments convened a workshop to address these issues by reviewing the methods that are currently available for deriving and applying tolerance classifications. Based on the discussions during the workshop, we have concluded the following. First, tolerance classifications can be derived that discriminate between certain types of anthropogenic stress. Second, several derivation methods are available and produce equally defensible tolerance classifications. The choice of the appropriate method depends strongly upon how the tolerance classifications will be used for assessment. Third, existing state water quality programs will benefit greatly from the availability of improved tolerance classifications.